You can't be happier than your wife. Happiness Gaps and Divorce

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"You can't be happier than your wife. Happiness Gaps and Divorce"

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Abstract

This paper asks whether a gap in spouses' subjective happiness matters per se, i.e. whether it predicts divorce. We use three large panel surveys to explore this question. Controlling for the life satisfaction levels of spouses, we find that a larger happiness gap, even in the first year of marriage, increases the likelihood of a future separation. This association even holds for couples where both spouses are identified as being better off than in their outside option. We interpret this observation as reflecting a concern for relative utility. To the best of our knowledge, this effect has not been taken into account by any existing economic models of the household.

The relationship between happiness gaps and divorce is consistent with the fact that couples who are unable to transfer utility are more at risk than others. It is also possible that assortative mating by happiness baseline level reduces the risk of separation. However, assortative mating cannot entirely explain the finding, as a widening of the happiness gap over time increases the risk of separation. We also uncover an asymmetry in the effect of happiness gaps: couples are more likely to break-up when the difference in life satisfaction is unfavorable to the woman. De facto, divorces appear to be initiated predominantly by women who are less happy than their husband. This asymmetry suggests that the effect of happiness gaps is grounded on motives of relative deprivation, rather than on a preference for equal happiness.

The presence of this new argument in spouses' utility is likely to modify their optimal behavior, e.g. in terms of labor supply. It should also be taken into account for public policy measures concerning gender-based labor incentives.

Keywords: divorce, happiness, comparisons, panel, households, marriage.

JEL codes: J12, D13, D63, D64, H31, I31, Z13

1. Introduction

Are people averse to welfare inequality? Do they make happiness comparisons? And does this take place even within couples? Based on three different panel surveys, this paper suggests that the answer to each of these questions is yes. Controlling for the level of well-being[1] of spouses, as well as various characteristics that have been found to be associated with marriage stability, we find that a higher happiness difference between spouses increases the risk of divorce.

To the best of our knowledge, the hypothesis that happiness gaps per se (or gaps in utility) may exert an influence on the stability of marriages has never previously been explored in the literature on marriage, divorce and interactions inside couples.[2] The stylized fact that we uncover challenges the existing models by proposing a new argument in the utility function of spouses, namely relative deprivation. This motive is likely to influence the optimal behavior of spouses, e.g. in terms of labor supply, as well as the framework of gender-based public policy.

The evidence presented in this paper suggests that people care about the distribution of well-being per se. Income comparisons, status effects, and aversion to income inequality in general, have been widely documented, in the realm of the labor market in particular, but also

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[1] We use the terms well-being, life-satisfaction and happiness interchangeably in this paper, and we assume that these three self-declared mental states are approximations of experienced utility (as opposed to decision-utility, which is unobservable, see Kahneman *et al*., 1997). De facto, these measures are highly correlated. For instance, the correlation between self-declared life satisfaction and self-declared happiness, both measured on a 1-10 scale, is 0.7 in the European Social Survey (waves 2002, 2004 and 2006; see Clark and Senik, 2010).

[2] Although marriages and divorces are private matters, they actually have important implications for economic outcomes. For instance, as was suggested by Becker *et al.* (1977), the prospect of separation reduces the incentives of spouses to invest in marriage specific assets such as the number and human capital of children. Divorce is also related to the participation of women in the labor market, both as a cause and a consequence. Marriage and divorce, and the regulations that relate to them, thus have the potential to influence these important aspects of economic life.

in society as a whole (see Clark *et al.,* 2008, and Senik, 2009). However, the ultimate interest of policy-makers, researchers and human beings in general lies in well-being rather than income per se. The usual focus on income is because income, as opposed to well-being, is an observable proxy, and is a metric of well-being, not only for researchers, but also in the daily experience of workers and citizens. However, in small organizations where people are involved into frequent, repeated and long-term relationships, well-being could be observable to a certain extent. Couples are obviously an extreme case of this type of situation, and it has actually been shown that spouses are able to predict each other's declared happiness levels (Diener 1984; Sandvik *et al*. 1993). Actually, couples represent one of the rare real life groups (as opposed to experimental settings) in which researchers can be quite certain about the direction of comparisons that potentially occur between agents.

The third objective of the paper is to assert the reliability of subjective variables. Showing that self-declared happiness actually has a predictive power for decisions and actions can strengthen the confidence that it reflects more than the noise produced by mood, social desirability biases, framework effects, question ordering and other unessential phenomena. In the same spirit, Freeman (1978), Clark (2001), and Kristensen and Westergaard-Nielsen (2006) have shown that job satisfaction is a strong predictor of job quits, even when controlling for wages, hours of work and other standard individual and job variables.

We use three longitudinal surveys that contain a life satisfaction question labeled in very similar ways: the German Socio-Economic Panel (GSOEP, 1984–2007), the British Household Panel Survey (BHPS, 1996–2007) and the Household, Income and Labor Dynamics in Australia Survey (HILDA, 2001–2007**)**. The two former surveys have been used extensively by the scientific community, especially in the field of happiness economics.

We find that a happiness gap between spouses in any given year is positively associated with the likelihood that a separation will occur in the following year or in subsequent years. In order to mitigate concerns about reverse causation, we show that even a happiness gap in the first year of marriage (for couples who were surveyed during their first year of marriage) increases the risk of a future separation. The influence of happiness differences is statistically significant both for couples who form a new couple after the break-up of their initial union and for those who do not. The widening of the happiness gap is also associated with a higher risk of divorce. Happiness gaps are associated with a higher risk of future divorce even for couples whose utility is higher than what can be deemed to be their outside option.

We interpret this finding as resulting from an aversion to unequal sharing of well-being within couples. This is consistent with the fact that couples who are unable to transfer utility are more at risk than others. It is also possible that assortative mating in terms of happiness baseline-level reduces the risk of divorce. However, assortative mating cannot totally explain our findings. First, a widening of the happiness gap over time increases the risk of separation. Moreover, after controlling for lagged values of the happiness gap, or for the initial value of the match (in the first year of marriage), the coefficient on the current happiness gap remains statistically significant, which we take as an indication that the effect goes beyond the initial quality of the marriage.

Finally, we uncover an asymmetry in the effect of happiness difference, which is driven entirely by women who are less happy than their partner. This suggests that the destabilizing effect of happiness gaps is based on a relative deprivation motive, rather than on a pure preference for equality (in well-being).

2. Happiness gaps and divorce in the economic literature

This paper belongs to the literature on the economic analysis of marriage and divorce. This body of literature has focused on the reasons for marriage,[3] the causes of marriage instability, the behavior of spouses in terms of the demand for goods and supply of labor, and the efficiency of the equilibrium in the cases of cooperative and non-cooperative bargaining. However, to the best of our knowledge, the literature has barely addressed the issue of the *difference* in spouses' utility or well-being as such.

In altruistic household models à la Becker (1974), the head of the household cares for the welfare of each member, but not for the equality of welfare among members as such.[4] In

[3] Marriage is considered as a "partnership for joint production and joint consumption", such as "producing and rearing children" (Weiss, 1997). Other justifications for marriage include the existence of couple-specific production technology or complementarity/substitutability between goods. Marriage as a long term arrangement is also grounded on the benefits yielded by increasing returns to scale, the division of labor, risk pooling and improved coordination between spouses (Weiss, 1997).

[4] Under the assumption of caring preferences, it is true that: "*In general, the higher the degree of caring, the narrower will be the range of conflict. That is, both partners will agree to delete extremely unequal distributions*

collective models à la Chiappori (1988, 1992), choices can be described as spouses trying to reach the highest collective utility frontier, then choosing a point on the frontier to regulate the division. The sharing rule depends on their respective preferences and bargaining power ("distribution factors"), with the latter reflecting *inter alia* spouses' outside wage, the marriage and divorce legislation, child custody rules, the sex ratio on the relevant (re-) marriage market, etc. However, the sharing rule does not include a constraint on the degree of equality of outcomes. Finally, in the case of non-cooperative models, where members are represented as being linked by externalities, but acting non-cooperatively, each person determines the variable under her control, taking the decision of her spouse as given: thus, the outcome can clearly be distributed very unequally across spouses, depending on their relative threat points.

In all types of models, couple dissolution occurs endogenously when the value of marriage is less than the value of divorce to at least one spouse, after possible transfers of utility, i.e. "*whenever the couple cannot find an allocation within marriage that dominates the divorce allocation. This rule for "efficient divorce" holds as long as utility is transferable across spouses*…" (Weiss, 1997, p. 112). Concretely, transfers of utility can take the form of income transfers, compromise, or spillovers of happiness, i.e. contagion. Divorce is efficient when the actual value of marriage differs from its expected value. As put by Becker et al. (1997, p. 1144), "*the majority of divorces results from uncertainty and unfavorable outcomes and, therefore, would not occur in a world where outcomes could be anticipated*". This is because some of the relevant information on the quality of the match is revealed only through time, and exogenous shocks inevitably occur subsequent to the formation of the couple. This new information influences both the value of the marriage (e.g. emotional intensity, children, earnings, health condition, or other characteristics of the spouses) and the value of the outside options (including other matches) against which the value of marriage is compared (Weiss, 1997, Weiss and Willis, 1997). This very brief discussion shows that the economic models of

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from the family's choice set" (Weiss, 1997, p. 93). However, this does not mean that caring spouses will necessarily equalize their well-being, and it is not because spouses have a concern for the distribution of happiness per se. It is simply because under very unequal distribution of consumption, an equalizing transfer will make both partners better off, because the relatively deprived spouse obtains a higher marginal utility of consumption, which more than compensates her altruistic partner.

marriage do not contain any predictions concerning the relationship between utility gaps between spouses and the risk of divorce.

Of course, when utility is not transferable, non-Pareto-improving divorce can occur[5] following any shock that brings at least one spouse below her outside opportunity. Even without a pure concern for happiness inequality, this could lead to an apparent relationship between happiness gaps and divorce, because the higher the happiness gap, the more likely it is that one of the spouses is below her outside opportunity, if, on average, the benchmark utility locus is relatively equally shared between spouses. Hence, the empirical association between happiness gaps and divorce could hide the non-transferability of utility.

However, a clear case where the association between happiness gaps and divorce cannot be attributed to the non-transferability of utility (even if utility is not actually transferable) is the case where the participation conditions are respected for both spouses. In this case, the difference in utility should not be associated with the risk of divorce, unless there really is some aversion to happiness discrepancy.

As has been shown by this discussion, two possible deviations from the classical model can explain the empirical association between happiness gaps and divorce: (i) the imperfect transferability of utility and (ii) the importance of happiness gaps per se. Although we are interested in the second one, we do not consider these two hypotheses as mutually exclusive. On the contrary, it is quite plausible that when the utilities of spouses diverge to a large extent, this probably indicates that the "identity" of the couple as such has decayed; as a result, large happiness gaps likely go hand in hand with greater difficulty of making utility transfers. In the same order of ideas, Thompson (2008) suggested that communication difficulties can put a marriage at risk, and quoted empirical evidence of this phenomenon. Finally, even the clearest case of aversion to happiness discrepancy cannot be understood without incomplete transferability of happiness.

Bringing these predictions to the data, we test the null hypothesis of no association between happiness gaps and the risk of divorce. We find that, *ceteris paribus*, happiness gaps are

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[5] Although Becker *et al*. (1977, p. 1145) allege that "*the rigidity in […] marital division has been greatly exaggerated, and combined maximization is probably the appropriate model*".

robustly associated with a greater probability of a future separation, even for spouses whose level of utility is higher than their outside option. Our interpretation is that this reflects a concern for the distribution of welfare per se.

Notice that, in the case of non-transferable utility and aversion to happiness inequality, couples in which the spouses are similar can be expected to be more stable, as their similar personalities, characteristics or choices reduce the scope of conflicts. Hence, positive assortative mating is likely to be favorable to the stability of marriage, a relationship that has often been observed, and to which we bring a new element of explanation.

This paper naturally belongs to the happiness literature. The two bodies of literature are not totally disconnected: in their 1997 paper, Weiss and Willis used the self-declared happiness of spouses as an indicator of the quality of their match. More generally, a series of papers in economics and psychology have provided evidence that, compared to remaining single, marriage has a positive impact on mental health (Gove *et al*., 1983), physical health (Wilson and Oswald, 2005), life satisfaction (Stutzer and Frey, 2004; Zimmerman and Easterlin, 2006), and life expectancy (Gardner and Oswald, 2002; Hu and Goldman, 1990). Stutzer and Frey (2004) show that the higher happiness of married people is partly due to a selection effect (those to-be-married in the future are already happier than those to-remain-single, even before they marry), but not entirely. Concerning divorce, using the BHPS, Gardner and Oswald (2005) show that "*divorcing couples become happier by breaking up*". Hu and Goldman (1990), in a longitudinal survey, estimate that divorced males have higher mortality rates relative to the married population in Asian countries, North America and Europe. However, this could stem from a selection effect, as Stutzer and Frey (2004) find that the lower happiness of divorced people was already observable during their marriage. A few papers from the same body of literature have tried to address the ideas of altruism and intra-household externalities of welfare. Powdthavee (2004) has shown evidence of positive spillovers of subjective well-being between spouses, using the British Household Panel Survey. In a recent paper (Powdthavee, 2009), he also observed that a negative correlation between spouses' subjective well-being is associated with a greater likelihood of divorce. Lucas and Schimmack (2006), using the German Socio-Economic Panel, also found evidence of spousal similarity in life satisfaction. In the same spirit, Bruhin and Winkelmann (2009) have provided evidence that parents' self-declared happiness is positively correlated with their children's happiness; more "altruistic" parents actually make higher financial transfer payments to their children.

Finally, this paper belongs to the body of literature dedicated to the effects of income distribution and income comparisons on subjective well-being (see the reviews by Alesina and Giuliano, forthcoming; Clark *et al*., 2008; and Senik, 2009). These studies have confronted the difficulty of identifying the direction, intensity and welfare effects of income comparisons. As has already been noted, couples represent one of the rare real life groups (as opposed to experimental settings) in which researchers can be quite certain about the direction of comparisons that potentially occur between agents. With respect to this body of literature, the contribution of this paper is to provide evidence of happiness comparisons in the realm of within-household interactions.

The next section presents the data, Section 4 presents the empirical specification, Section 5 discusses the results and Section 6 concludes.

3. Data

We use three large panel surveys, the *German Socio-Economic Panel* (GSOEP, 1984-2007), the *British Household Panel Survey* (BHPS, 1996-2007) and the *Household, Income and Labor Dynamics in Australia* (HILDA, 2001-2007) survey, which all include subjective happiness questions and contain information about all adult members within households. Descriptive statistics of the regression samples are presented in Table 1.

Admittedly, the focus of this paper is not on the comparison between Germany, the United Kingdom and Australia. Rather, we use these datasets because the BHPS and the GSOEP are two of the main panel surveys that have been used in the happiness literature, so that results obtained with both sources will have more generality. We also complement these with a more recent data set (HILDA), which contains some very useful subjective variables. Conducting the same analysis on three data sets separately is one way to include a self-contained "replication check" on the validity of the results. Using several datasets also allows exploiting complementary pieces of information. For instance, the GSOEP has information on expected life satisfaction, whereas HILDA has information about who initiated the divorce, among other things.

For each survey, we construct the regression dataset in the following way: we define as observations (rows) women who have been either married or living with a partner at some point during the survey. Each woman is matched with her spouse or partner. The variables

(columns) contain the information relative to each woman and to her spouse or partner. The total number of observations is thus equal to the number of women times the number of years they are surveyed. (We also checked that the results were identical when men were used as the unit of observation.)

3.1 The GSOEP

The GSOEP[6] is a wide-ranging representative longitudinal study of private households, which has been conducted annually since 1984. It includes information on objective living conditions, as well as on many subjective attitudes. Self-declared happiness ("*How satisfied are you with your life, all things considered?*") is a categorical variable that takes the values 0-10 (where 0 is "*totally unhappy*" and 10 is "*totally happy*") and is available for every year in the survey. The GSOEP also includes a separate spell dataset for marital status, indicating the beginning and ending dates of each marriage spell.

We restrict the sample to individuals aged 18-65 and exclude transitions into widowhood. Thus, our regression sample includes women for whom there are no missing values for the variables that show up in the main specification. There are 107,627 such women, of whom 2,038 separate from their partner at some point between two given years of the survey (1230 were legally married and 808 were de facto cohabitating). We also observe 899 new marriages. For each year, the probability of separation from one's partner, conditional on having a partner in the previous year, is 2.02%.

3.2 The BHPS

The BHPS is a longitudinal annual household survey that began in 1991.[7] The wording of the life satisfaction question that we are using is "*How dissatisfied or satisfied are you with your life overall?*" The answers are measured on a scale from 1 (*not satisfied at all*) to 7 (*completely satisfied*). This question about life satisfaction has been asked in all waves since 1996, with the exception of 2001.

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[6] For further information on GSOEP, see http://panel.gsoep.de/soepinfo2008/.

[7] Detailed information about the BHPS can be found at http://www.iser.essex.ac.uk/survey/bhps.

Our regression sample (1996-2007), described in Table 1, contains people who live with a partner for at least one year during the observation period and for whom there are no missing values for the variables used in the main specification. We restrict the sample to individuals aged 18–65 and exclude transitions into widowhood. Hence, it includes 29,296 couples, of whom 594 (i.e., 2%) separate at some point between two given years of the survey. Of those, the 4,801 couples who cohabit without being legally married have a higher separation rate, namely 5.8%.

3.3 HILDA

HILDA is a nationally representative Australian household-based panel study, which has been run annually since 2001, in order to collect information on economic and subjective well-being, labor market dynamics and family dynamics in Australia.[8] Interviews are conducted annually with all adult members of each selected household. Respondents declare their level of life satisfaction (*All things considered, how satisfied are you with your life*? *Pick a number between 0 and 10 to indicate how satisfied you are. 0: Totally dissatisfied, 5: Neither satisfied nor dissatisfied, 10: Totally satisfied*). The data include very detailed information on the relationships and life events that occur in each year.

This paper uses the first seven waves of the HILDA survey (2001 to 2007). We consider all individuals who have been married or living with a partner for at least one year during the survey and whose partner is also identified. Our regression sample contains 19,598 observations (couples). From 2001 to 2007, we observe 546 separations and 731 new marriages.

The separation rates observed in the three samples coincide with the figures published by the respective national statistical offices. The average rate of separation from one year to another is around 2%. Of course, this risk accumulates over time: for instance, more than half of the couples who were legally married in the first year of each survey had broken-up by 2007 (50% in BHPS, 54% in HILDA, 65% in GSOEP).

[8] See http://www.melbourneinstitute.com/hilda/.

In all three databases, women tend to be happier than men (see Table 1). For most couples, the difference is relatively small, however. About one third of couples have both spouses declaring exactly the same happiness level. A difference of one step (on the happiness ladder) is also observed in one third of couples. Hence, a situation of spouses experiencing similar levels of happiness is actually predominant. However, the gap tends to be larger in couples that will separate one year later. As is shown by the descriptive statistics in Table 1, happiness gaps fluctuate around 0 for couples who are still together in the following period, but are larger for those who are going to separate. As expected, total happiness is much lower for the latter than for the former. People who separate tend to be younger, have a lower household income (a lower male income but a higher female income), have fewer children (except in BHPS), have a shorter duration of marriage, are less often legally married, and are less satisfied with their partner one year before separation.

4. Empirical specification

Our main objective is to test the null hypothesis that happiness gaps, as such, do not influence the stability of marriage. For this purpose, we set up a simple framework that integrates the usual arguments of marriage and divorce models, and we add the potential effect of the happiness gap. We first present the reasoning, then explain how we measure the magnitudes of interest.

4.1 The structure of our test

Suppose that the frontiers of possible utility for a couple are represented by U_0, U_1, … in Figure 1. This linear functional form implies that utility is transferable at a constant rate, but this need not be the case, and the reasoning is the same with quadratic forms of utility transfers, i.e. positive or negative curvature of the utility frontiers. Suppose that the outside option of a couple is represented by point O on line U_0, so that the value of the male outside option is U_{M0}, and that of the female outside option is U_{W0}.

In the -most widespread- cooperative theory of the household, a union efficiently unravels whenever its value becomes lower than some benchmark, which can be defined as the outside options of spouses, or the initial expected value of marriage, in the spirit of the participation constraint (Weiss, 1997). When utility is transferable, the condition for marriage continuation is that the set of reachable aggregate utility remains above the aggregate value of outside

options: $(U_{Mt} + U_{Wt}) \geq (U_{M0} + U_{W0})$; i.e., that the utility frontier at period t be located higher than U_0. For example, if a couple's utility is as point A on U_1, it is better for the husband to transfer some utility to his wife (moving to point D or E), rather than to have the outside option O. Beyond this condition, there is no reason why the distance between the utility locus and the equal utility schedule -represented by the 45° line- should be important for the stability of the marriage. Empirically, the implication is that controlling for the marriage surplus in year t [$(U_{Mt} + U_{BWt}) - (U_{M0} + U_{W0})$], there is no reason why a happiness gap in period t $|U_{Mt} - U_{Wt}|$ should be associated with divorce in period $(t + 1)$. Thus, our basic test examines the null hypothesis that the coefficient on $|U_{Mt} - U_{Wt}|$ in the following equation is equal to zero:

$$\text{Probability of separation}_{t+1} = f[\,(U_{Mt} + U_{Wt}) - (U_{M0} + U_{W0}),\ |U_{Mt} - U_{Wt}|\ ,\ X_{Mt}, X_{Wt}\,], \qquad (1)$$

where $\boldsymbol{X}_{Mt}$ and $\boldsymbol{X}_{Wt}$ include the characteristics which have been identified in the literature as driving the value of marriage and divorce (see below).

Of course, the first task of this empirical investigation is to define the value of the outside option of each spouse U_{M0} (male happiness) and U_{W0} (female happiness). As we do not observe these values, we consider several possible concepts of outside options.

(i) A first possibility is to measure the average value of an individual's outside option, depending on the relevant characteristics uncovered by the empirical literature (see Becker *et al*., 1977; Bumpass and Sweet, 1972; Smock *et al*., 1999; Weiss and Willis, 1997), i.e. age, labor income, financial and other assets, education, number of children, etc. In this framework, controlling for the variables contained in the vector of socio-demographic controls X_{Mt} and X_{Wt} is enough to capture the average effect of U_{M0} and U_{W0}, and the equation to test is simply:

$$\text{Separation}_{t+1} = f[\,(U_{Mt} + U_{Wt}),\ |U_{Mt} - U_{Wt}|,\ X_{Mt}, X_{Wt}\,]. \qquad (1.i)$$

(ii) An alternative measure of an individual's outside option is the average happiness of single people of the same age and gender category, as measured in the survey.

(iii) Finally, the relevant benchmark for someone considering the possibility of divorce could be the average level of happiness reached by divorced people a few years after their separation. Here, we measure this value three years after separation.

The average value of total happiness in outside options ($U_{M0} + U_{W0}$) is as follows: (ii) 9.45, (iii) 10.07 in BHPS; (ii) 13.84, (iii) 14.02 in GSOEP, and (ii) 15.76, (iii) 15.68 in HILDA.

We test the null hypothesis that the coefficient on $|U_{Mt} - U_{Wt}| = 0$ by estimating equation (1) under these different definitions of the outside options U_{M0} and U_{W0}.

Additional restrictions

Of course, the null hypothesis could be rejected either because spouses care about the distribution of happiness or because the gap is capturing some other phenomenon (or both). In order to narrow the range of interpretations of the finding, we estimate the different versions of equation (1) on increasingly restricted samples.

Firstly, it could be that controlling for the level of aggregate happiness is not enough, because the perceived effect of the happiness gap is driven by couples who are below their outside option. In order to rule out this risk, we focus on couples whose current aggregate utility is greater than their (supposed) outside option (whose utility frontier is above U_0), i.e., who verify:

$U_{Mt} + U_{Wt} \geq U_{M0} + U_{W0}$. (condition 1)

Under condition (1), if utility is transferable, couples should not break up, so that the effect of the happiness gap is well isolated. However, if the null is not rejected even under condition (1), it can be because utility is not transferable. It could also be because condition (1) is not sufficient to ensure that the participation constraint of each spouse is respected, because the slope of the utility frontiers under divorce are different, like U_0' in Figure 1.[9]. We therefore consider the most clear-cut case, corresponding to an even narrower sample, as represented by the segment CD on the utility frontier U_1, where the utility of each spouse is superior to her (supposed) outside option:

[9] When utility curves intersect, the terms of utility exchange between wife and husband within and outside marriage are different, so that even with the same total utility, there are points of the divorce utility line that are out of reach during marriage (and vice-versa). In Figure 1, for all points of U_0' which are located to the left of point F, the husband would be unable to compensate his wife for the surplus of utility that she could obtain outside marriage.

$U_{Mt} > U_{M0}$ and $U_{Wt} > U_{W0}$ (condition 2)

We thus test equation (1), with the alternative definitions of outside options (ii) and (iii), on the increasingly restricted samples that verify conditions (1) and (2). If the tests reject the null hypothesis of no association between happiness gaps and divorce, this will not be uniquely attributable to the impossibility of transferring utility, as both spouses are above their outside option. Hence, this test genuinely addresses the impact of happiness gaps on divorce. Admittedly, happiness gaps can only put marriage at risk if utility transfers are difficult; otherwise spouses would reallocate total utility. In other words, the test detects the importance of happiness gaps in the possible presence of imperfect transferability of utility.

We also estimate the relationship between the risk of divorce and the evolution of the happiness gap on the sub-sample of couples whose happiness gap has increased over time:

$$\text{Separation}_{t+1} = f\left[(U_{Mt} + U_{Wt}), (|U_{Mt} - U_{At}| - |U_{M\,t-3} - U_{W\,t-3}|), X_{Mt}, X_{Wt}\right] \quad (2)$$

To be as restrictive as possible, we estimate equation (2) conditional on:

$U_{Mt} \geq U_{Wt-3}$ and $U_{Wt} \geq U_{Wt-3}$. (condition 3)

This addresses the following questions: controlling for the level of total happiness, does an increase in the happiness discrepancy put the marriage at risk, even when the level of happiness of each spouse has increased? In other words, if a couple was at point G at period 0, is it more at risk in period t if it stands on segment IH rather than on segment HE (which is closer to the diagonal) on line U_1? Note that no assumption concerning the value of U_{M0} and U_{W0} has to be made in this case.

Robustness tests

Assortative mating. Our preferred interpretation is that the effect of happiness gaps on divorce expresses a concern for relative happiness. However, an alternative explanation could be that a wider happiness gap reflects a greater dissimilarity between spouses. Indeed, in the case of non-transferable utility, the similarity of spouses in terms of personality and preferences reduces the scope of conflicts. Hence, positive assortative mating is likely to generate both smaller happiness gaps and greater marriage stability. In order to address this issue, we control for spouses' similarity in a number of dimensions (religion, nationality, country of birth, education, etc.). We also show that the dynamic evolution of happiness gaps

is associated with a greater risk of divorce, which cannot be explained by the initial quality of the match.

Reverse causality. We still need to rule out other alternative interpretations, such as that of reverse causality running from the expectation of a divorce in the near future to the happiness gap, for instance, if the marriage is ailing and the prospective divorce renders one spouse more unhappy than the other. We try to rule out this alternative interpretation using different methods. First, we control for lagged values of the happiness gap. Next, we consider the sub-sample of couples who are already under observation in the survey in the first year of their marriage. We then estimate the effect of the absolute value of the happiness gap in the first year of marriage on the probability of ever divorcing in subsequent years, during the period of observation. Finally, we check that our results hold on the sub-sample of individuals who do not form a new union one year after their separation: the risk of reverse causality is lower than on the complementary sub-sample.

Fairness versus relative concerns. A possible formulation of the importance of the happiness gap in terms of Figure 1 is that the subjective reference point of spouses, i.e. the benchmark to which they are comparing their well-being is not purely self-centered, but is the equal utility locus, defined as the intersection between the marriage utility frontier and the 45° line (point E). It could be that even when this situation does not realistically represent their outside option, it appears to them as a feasible and "fair" allocation. In this case, whenever the distribution of happiness moves too far from this point, the actual surplus of marriage is judged to be unsatisfactory (unfair?) by at least one spouse. The question then is whether this stems from a preference for equality in happiness, or from the relative deprivation of the less happy spouse. A simple way of disentangling the two interpretations is to look at symmetry: does the association of happiness gaps with divorce depend on whether it is the husband or the wife who is relatively less happy? If the effect is asymmetric (i.e. the relative happiness deprivation of one spouse, say women, is more destabilizing for the union than that of the other spouse (men)), we will interpret this as evidence of relative concerns (relative deprivation) rather than as a pure taste for equality in happiness..

In addition, we also control for other determinants of divorce that have been uncovered in the empirical literature (see for instance Weiss and Willis, 1997), such as, for both spouses: objective and subjective health, duration of marriage, labor market status, work experience, years of schooling, numbers of working hours, months of previous unemployment, house

ownership, number of previous legal marriages and cohabitations, type of management of household budget, share of household work, the fact of having had divorced parents, health shocks, unemployment shocks, height, Body Mass Index, etc.

4.2 Variables and specification

As was explained in Section 3, we use self-declared happiness as a proxy for well-being and ex-post utility (see Kahneman *et al*., 1997). Over the past decade, the recourse to subjective measures of well-being has gained popularity, due to the availability of large-scale national surveys such as the British Household Panel Survey and the German Socio-Economic Panel, which are used in this paper, as well as international databases, such as the World Values Survey or the International Social Survey Programme. A considerable amount of work has gone into showing the robustness and validity of these measures (see the reviews by Frey and Stutzer, 2002; Di Tella and MacCulloch, 2006; Kahneman and Krueger, 2006; Clark *et al*., 2008), as well as the stability of the structure of satisfaction across time and space (di Tella *et al*., 2003).

Following the existing empirical literature (e.g. Becker *et al.*, 1977; Bumpass and Sweet, 1972; Smock *et al.*, 1999; Weiss and Willis, 1997), X_{Mt} and X_{Wt} include the socio-demographic variables that influence the value of being in marriage versus out-of-marriage (household income, education of spouses, children, duration of marriage), as well as variables that capture the potential threat points of each spouse (e.g. individual income, education, age, age difference between spouses).

To avoid perfect collinearity between happiness variables, we have recourse to a nonlinear specification of the happiness gap between spouses. Our main specification consists of including the absolute value of the happiness gap between a respondent and her spouse, together with the total happiness gap. We also consider dummy variables that take the value one if self-declared happiness of the woman is greater (respectively lesser and equal) than that of her partner. This allows us to identify the sign of the effect. We estimate the various specifications of equations (1) and (2) on the pooled data of each national survey (separately),

using a probit model, where we cluster the standard errors by individual, in order to correct for the autocorrelation of observations that pertain to the same individual.[10]

Of course, this exercise is based on the assumption that spouses compare their happiness levels, i.e. that they are able to observe the happiness level of their partner. It has indeed been shown (Sandvik *et al*., 1993) that the level of happiness declared by an individual is correlated with the level of happiness that her spouse perceives her to experience. To be safe, we run estimates that include the dynamic evolution of the happiness difference; this eliminates any misperception that could characterize a couple in an invariant way.

5. Results

We present the estimates of the association between happiness gaps and the likelihood of divorce, going from the more general specifications based on the whole sample to increasingly demanding assumptions that correspond to sample restrictions.

5.1 Happiness gaps increase the likelihood of divorce…but in an asymmetric way

Panel A of Table 2 presents the estimates corresponding to the basic specification, i.e. considering that the value of the outside option is captured by the controls (equation (1.i)). Controlling for the total level of happiness of a couple (as well as for age, age difference between spouses, education of spouses, the duration of the union, the number of children and log real household income), a 1 unit increase in the absolute value happiness gap between spouses raises the probability of separation by 0.23 in Germany (GSOEP), 0.2 in Australia (HILDA) and 0.08 in the United Kingdom (BHPS). This represents a non-negligible share of the average risk of breaking-up, which is about 2%.

[10] Another possibility would be to use a duration model. Sueyoshi (1995) has shown that a much simpler logit or probit model with period-specific variables yields similar results; we thus introduce year dummies in a robustness specification. Kraft and Neimann (2009) use a complementary log-log model with a marriage duration specific dummy variable, which is perfectly equivalent to a discrete-time proportional hazard model, but is better suited to the analysis of rare events like divorce. In a working paper version of this article, we checked that our results are maintained with this specification.

The effects of the other controls are consistent with the existing literature: the probability of divorce decreases with the (log) total real household income and with the age of the spouses, but increases with the age difference (female – male). The association between the number of children and marriage stability is negative in the GSOEP and insignificant in the two other data sets.

The coefficient on the happiness gap is less precisely estimated in the BHPS. This is because, as is shown in Panel B of Table 2, the effect is particularly asymmetric in Great Britain. Indeed, the lesson of Panel B is that happiness gaps are only associated with divorces when they are unfavorable to the woman! More generally, all of the specifications based on dummy variables that capture the sign of the happiness difference reveal that the effect of happiness gaps is entirely driven by relatively less happy women. In all three countries, a situation in which the woman is unhappier than her partner increases the risk of separation in the following year by about 0.5 (as compared to a situation in which both partners report the same level of happiness). For cohabitating couples, the risk is ten times higher (this result is not reported in Table 2, but is available from the authors on request).

The asymmetry also holds when controlling for alternative definitions of the outside options (see below). This naturally leads to the question of whether divorce is actually initiated by women when they are unhappier than their husband. In the 2005, 2006 and 2007 waves, the Australian survey contains retrospective information on the person who initiated the separation. The findings are impressive: 60% of separated women report that they were responsible for the decision to separate. Only 16% of women attribute the responsibility to their husband, and 24% declare that the separation was initiated by both spouses. In Germany, a study of the Ministry of the Family, carried out in 2003, reports that about two thirds of divorces are initiated by women (quoted by Kraft and Neimann, 2009).[11] We also checked that in the Australian survey, women who reported to have initiated the divorce were actually less happy than their husbands.[12] In contrast, when the decision to divorce was taken by both spouses or by the husband, chi^2 tests do not reject the null hypothesis of equal satisfaction of

[11] The same evidence is reported by Brinig and Allen (2000) in the case of the United States.

[12] Their average level of happiness was 6.89 (0.30), versus 7.7 (0.21) for their husband, and the difference is significant at the 5% level (chi^2 test = 0.0104).

spouses. This is consistent with the idea that divorces tend to be initiated by women not only because they are unhappy, but also because they are less happy than their husband.

What are the reasons for the asymmetric effect of happiness gaps? Are women more subject to happiness comparisons? Do they attach more importance to the couple as a spillover mechanism? Or do they expect more from their marriage than men, as opposed to other domains of life? We are unable to answer this question using the available data. We tried but failed to observe a correlation between divorce and unequal amounts of housework or child care (see Section 5.4). One possible explanation is that exit conditions are more favorable to women, due to the divorce legislation concerning alimony, financial transfers and child custody (see Clark, 1999; Rasul, 2006; Rasul and Matoushek, 2008). With only three surveys concerning relatively similar countries, it is difficult to trace the impact of legislation on divorce decisions. However, if this explanation is valid, this means that relative concerns are important and influence individual behavior when the context permits it.

Importantly, the asymmetry of the relationship between happiness gaps and divorce allows us to distinguish between two different interpretations. It suggests that the effect of happiness gaps stems from relative concerns (relative deprivation), rather than from a pure preference for equality in happiness: otherwise women would also initiate divorce when they are happier than their partner.

Table 2 about here.

5.2 Happiness gaps increase the likelihood of separations, even when marital surplus is positive

Table 3 (Panels A and B) presents results for specification (ii) of equation (1).[13] It shows the coefficient on the happiness gap, controlling for total marital surplus, defined as the difference between an individual's current happiness and the mean satisfaction of singles of the same

[13] We only use specification (iii) in subsequent tables when we impose conditionality linked to the definition of marital surplus. Indeed, simply including the mean happiness of separated people, three years after their break-up, in the regression cannot change the coefficient of the happiness gap, as this variable takes the same value for all individuals, by definition.

age and gender. In Panels A and B of Table 3, the coefficient on the happiness gap remains of the same order of magnitude as in the basic specification.

Table 3 about here

Table 4 presents estimates of specifications (ii) and (iii) of equation (1) for couples whose total surplus is positive. Thus it estimates the impact of the happiness gap under the assumption that utility is perfectly transferable between spouses, and that the rate of exchange is the same both in and out of marriage (utility frontiers don't cross). The results are similar to those in Table 3, and the same is true of estimates based on the even more restricted sample of couples where both members experience a higher current utility than in their outside option (Table 5), although several coefficients are not well determined under this restriction. Hence, regardless of whether utility is transferable or not (and regardless of whether the utility curves intersect or not), couples where female happiness is lower than male happiness are more at risk of breaking up in the following year. These results suggest that happiness gaps do matter as such.

Table 4 and 5 here

Finally, Table 6 presents estimates of the impact of an increase in happiness gaps on the restricted sample of couples whose utility has increased over a period of three years. Even for spouses whose self-declared happiness has increased over time, the enlargement of the happiness gap remains a statistically significant predictor of separation in the following year (except for Great Britain). This dynamic specification shows that the effect of the happiness gap goes beyond the initial quality of the marriage, and hence cannot be totally explained by assortative mating (see Section 5.6).

5.3 Robustness

Table 10 shows that the coefficient on the happiness gap remains statistically significant when a series of additional controls are introduced into the regressions separately. Table 11 displays the coefficients on these factors.

The most remarkable (but classical, e.g. Weiss and Willis, 1997) result is that the risk of divorce increases with female individual income but falls with male individual income. Other factors that increase the risk of divorce include male and female unemployment (BHPS and

GSOEP), longer working hours of the woman (relative to her partner) and the parents of the woman being divorced.

Factors that decrease the risk of divorce are: a higher age at marriage (which is usually taken to capture the length of the search, hence the quality of the marriage), spouses being born in the same country, sharing the same religion, owning their house (GSOEP, HILDA), a high level of importance of the family declared by the woman, and, of course, high individual happiness levels of both partners, satisfaction with one's spouse and a good subjective mental health. The effect of education on marriage stability is not stable, conformingly to the literature, which posits an a priori ambiguous effect.[14]

Although our specification already tries to take into account the potential wedge between the actual and expected happiness levels of spouses, we attempted to control for some specific exogenous shocks that are likely to destabilize a marriage. Famous examples include shocks to the expected earning capacity of a spouse (Weiss and Willis, 1997), job losses, or health shocks (Charles and Stephens, 2004). We therefore checked that introducing shocks to the income and health status of each spouse did not change the order of magnitude of the coefficient on the happiness gap. Neither disability shocks nor firm closures were statistically significantly associated with the probability of breaking-up. These additional controls did not change the magnitude of the coefficient on the happiness gap (Tables 10 and 11).

In order to further explore the role of shocks, i.e. the difference between expectations and realizations, we used a series of questions from the GSOEP about respondents' current life satisfaction (1), their expected life satisfaction in five years' time (2) and their expected life satisfaction in one year's time (3) (answers from 0 'completely dissatisfied' to 10 'completely satisfied'). We included, alternatively, the difference between current happiness (question 1) and 5-year lagged expected future happiness (question 2); and the difference between current happiness (question 1) and one-year lagged expected happiness (question 3). This test can also be seen as another possible definition of the outside option of spouses as being the

[14] More education makes an individual financially less dependent on her spouse, but on the other hand, it increases the non-monetary gain from marriage due to the valuable characteristics of this person, as well as reducing the chance that her expectations concerning marriage were false, because of her higher intelligence (Kraft and Neimann, 2009).

happiness expectations that they formed in the past. As is shown in Table 7, including these additional controls in the main specification did not change our main result. Hence, even though shocks may affect the stability of marriage, they are not sufficient to explain away the impact of happiness gaps.

In terms of econometric specification, we also checked that the results were essentially unchanged in a complementary log-log specification, as well as in a rare events logit specification. In addition, we checked that the results were similar when the German sample (GSOEP) was restricted to West Germans. As a measure of the happiness gap, we replaced the absolute value of the happiness difference with the ratio of wife's/husband's happiness, or of the happier to the unhappier spouse. We also replicated all of our results using the post-estimation residual happiness (including the usual controls, as defined in equation (1)) instead of the happiness level (see Powdthavee, 2009). The results were essentially unaltered. Due to space constraints, we do not display these robustness tests.

Finally, Table 8 runs the basic estimates of equation (1) using a variable available in all three surveys, which measures satisfaction with one's partner rather than self-declared happiness. The results are as usual: when women are less satisfied with their partner than the reciprocal, the risk of marital dissolution is higher.

5.4 Interactions

Panel B of Tables 2, 3, 4, and 5 showed that the effect of the happiness difference is driven by unhappier women. In addition, we found that the effect is typically several times higher for cohabitating couples than for legally married couples. For instance, in Germany, a 1 unit increase in the happiness gap raises the probability of separation by 0.16 for legally married couples, versus 0.5 for cohabitating couples. In Australia, a 1 unit increase in the happiness gap raises the probability of a break-up by 0.2 for legally married couples, versus 0.9 for cohabitating couples. Accordingly, when we introduced a dummy variable for legally married (versus de facto) couples, the coefficient on this dummy was always statistically significantly negative (at the 1% confidence level), and varied from –2 percentage points (GSOEP and BHPS) to –5 percentage points (HILDA). The greater fragility of cohabitating couples, as compared to legally married ones, is a common observation in the literature. Brien *et al*. (2006), for instance, document this relationship using a longitudinal survey of American women, and interpret it in the framework of matching under uncertainty: couples who are

more uncertain about the quality of their match may choose to cohabitate rather than marry, in order to acquire more information and incur lower costs in case of separation.

In order to understand which couples are most concerned, we interacted the absolute value of the happiness gap with a large number of variables (controlling for the main effects of the latter). It turned out that few variables qualified the effect of the happiness gap significantly.[15] The statistical association between happiness gaps and the risk of divorce was particularly strong for higher levels of female income (GSOEP) and unemployed husbands (HILDA). It was weaker for women who declared that they attached a high importance to family (GSOEP, HILDA), to a good partnership (BHPS) or to religion (HILDA), and also for couples with longer marriage durations (HILDA, BHPS).

Among the interactions that were not statistically significant, let us mention female and male levels of happiness, an increase in the happiness gap over the three last years, male income, female unemployment, same nationality, same religion, divorced parents (although this was negative for males in HILDA), the number of previous marriages, and the presence of children in the household (distinguishing several age categories).Among the factors that magnified the impact of happiness gaps on the risk of separation, we found higher female income and higher number of worked hours.

5.5 Ruling out reverse causality

We interpret the effect of happiness gaps on the probability of separation as expressing a concern for relative happiness. However, we need to rule out alternative interpretations, such as reverse causality, i.e. the expectation of a break-up in the near future causing the happiness gap. Infidelity is likely to create such a situation, especially if one spouse is planning to dissolve her current relationship in order to form another couple with her new partner (South and Lloyd, 1995). We try to rule out this alternative interpretation using different methods.

First, we estimate equation (1.i) on the three-year lagged value of the happiness gap. As is shown in Table 9 (first row), we do observe a statistically significant association with the probability of divorce in (t + 1). However, a break-up can be anticipated and can produce

[15] Results are available from the authors on request.

asymmetric welfare effects on spouses a long time beforehand. To address this issue, we consider the sub-sample of couples who are already under observation in the survey in the first year of their marriage. We run equation (1.i) and look at the effect of the absolute value of the happiness gap in the first year of marriage on the probability of ever divorcing in subsequent years, over the observation period. The second row in Table 9 shows that an initial happiness gap of 1 unit increases the probability of a break-up in the following years by about 4 percentage points in the United Kingdom and Germany, and 2.3 percentage points in Australia. This represents between 7 and 15 percent of the average risk of separation observed in the surveys (see Section 3).[16] Thus, we observe a statistically significant effect of happiness gaps in the first year of marriage, hence (hopefully) before separation is on the horizon.

In order to go one step further, we once more use the panel nature of the surveys, which follow individuals when they move or break-up. We estimate the usual equation (1.i) both on the restricted sample of individuals who do not form a new couple one year after the dissolution of their union (row 4) and on those who do (row 5). The impact of the happiness gap turns out to be about ten times greater for couples who are not observed to be living with a new partner one year after they separate. This rules out the interpretation according to which it is the difference in the perspectives of the post-separation period that creates the happiness gap.

5.6 Assortative mating

The finding that happiness gaps, and in particular those which are already observable in the first year of marriage, are associated with a higher risk of divorce can be interpreted as a sign of assortative mating in terms of happiness baseline level. If well-being is not transferable, and happiness gaps matter per se, it is indeed efficient to choose a partner whose level of well-being is "naturally" on the same level as one's own. This can happen either because happiness is a natural personality trait as such, or because the spouses have identical

[16] The lower figure for Australia may be due to the fact that in Australia, de facto couples enjoy exactly the same rights as married couples after one year of cohabitation. Hence, the selection effect of couples who decide to get legally married is certainly high. The average risks of divorce that we calculate depend on the time span of the surveys.

preferences, which leads them to choose similar actions and reach similar levels of "primary" happiness (before any redistribution).

The economic theory of marriage predicts a "*predominance of positive assortative mating with respect to personal characteristics such as education, height, intelligence, age, property income, physical attractiveness, etc. […] all traits which are not good substitutes in the production of commodity income, while negative assortative mating would be optimal for substitutes, such as wage earning power*" (Becker *et al.*, 1977, p. 1146). This prediction has been confirmed by several empirical studies (e.g. Lehrer and Chiswick, 1993; Contoyannis and Jones, 2004; Kalmijn, 1994; Kalmijn *et al*., 2005). As an illustration, Weiss and Willis (1997) found evidence that couples with similar levels of schooling are more likely to marry and less likely to divorce. Likewise, similarities in terms of age, region of origin, ethnicity, religion, and social background, have been found to be associated with longer durations of marriages (see Frimmel *et al*., 2009 for a review), an observation that is confirmed in our surveys (see Section 5.3).

Matching could also happen along the dimension of well-being. Some psychologists (Lykken and Tellegen, 1996; Headey and Wearing, 1992, Cummins *et al*. 2008) have suggested that individuals are characterized by a "setpoint" (or baseline-level) of happiness, considered as a type of personality trait, partly determined by genetics. In this view, individuals can deviate from their baseline-level following shocks, but will eventually return to this level after a process of adaptation. Fujita and Diener (2005) and Lucas and Schimmack (2006), and more recently Headey *et al*. (2010), have questioned the relevance of this homeostasis theory: using the GSOEP, they found that individual self-declared happiness fluctuates significantly over time, and is less stable than other objective health measures such as body mass index, or systolic and diastolic blood pressure.

We do find some signs of assortative mating in our three datasets. The happiness levels of spouses are positively correlated, as has been established in the literature, in particular by Powdthavee (2004) and Lucas and Schimmack (2006). We compared the distribution of the happiness gaps of actual couples observed in the surveys with that of randomly matched singles aged 18–55. Figure 2 shows that whereas over 30% of actual partners stand on exactly the same happiness step, this is the case for only about 20% of randomly matched singles. Thus, the distribution of the happiness gap is slightly more balanced in the set of randomly matched couples. Admittedly, though, it is left-skewed and has a modal value of 1, which

certainly reflects the fact that self-declared happiness is quite concentrated at around 8 on the 10 step scale in GSOEP and HILDA, and around 6 on the BHPS 8 step scale, as is shown in Figure A1 in the Appendix.

Figure 2 about here

However, assortative mating does not completely explain the effect of happiness gaps on divorce. First, we showed that the risk of future divorce is associated not only with the level of the happiness gap, but also with its evolution over time (Table 6); in this specification, the quality of the match is neutralized by the first difference. Second, we also showed that, after controlling for the lagged values of the happiness gap, or for the initial happiness gap in the first year of marriage (Table 10), the coefficient on the current happiness gap remains statistically significant in the estimates based on GSOEP and HILDA, and is of the same magnitude, although imprecisely estimated, in estimates based on BHPS,[17] which again controls for the invariant part of individual happiness (if any). Third, in all three datasets we checked that the happiness gap between former spouses decreases over time after divorce (chi^2 tests reject the null that the happiness gap is the same before divorce as two, three and four years after divorce, at the 1% level). However, admittedly, the happiness gap between former spouses always remains statistically significantly higher than that of couples who remain married (by a magnitude of 15% to 30%, depending on the dataset; the chi^2 tests reject the null that the happiness gap is equal for divorced and married couples at the 1% level).

Finally, if assortative mating is conducive to higher marital happiness, one should observe a decline in overall marital happiness as the happiness gap increases.[18] Although we do find a negative correlation between the size of the happiness gap and the level of total happiness of a couple (see Figure 3), the interaction between the two measures is usually statistically insignificant. We also interacted the happiness gap with the happiness level of the unhappier spouse, and of either spouse, but the interactions were not statistically significant. Hence, the impact of the happiness gap on divorce is not driven by the low level of total happiness of the couple due to poor assortative mating in terms of happiness baseline-level.

[17] Note that the correlation between the current and lagged values of the happiness gap is always less than 0.3.

[18] We are grateful to an anonymous referee for this remark.

6. Conclusions

This paper offers new empirical evidence on the existence of relative happiness concerns in households. Keeping constant the aggregate level of happiness or marital surplus of a couple, a greater happiness difference between spouses reduces the stability of their union.

This result is robust to the inclusion of a series of controls that are classically taken to determine the stability of marriage. We address the risk of reverse causation by showing that the risk of divorce is statistically associated with the happiness gap in the first year of marriage. This finding points to the potential importance of assortative mating. However, the effect of happiness gaps goes beyond assortative mating, as is shown by estimates that neutralize the invariant quality of the marriage. Moreover, we uncover an asymmetry in the effect of the happiness gap: the latter is only a cause of divorce in cases where the woman is unhappier than her spouse. Our interpretation of these findings is that there is a concern for the distribution of happiness in couples, a comparison of well-being levels that can cause women to initiate divorce proceedings.

We try to show that our finding is not attributable solely to the non-transferability of utility; however, we do not exclude role of non-transferability, implying that couples which are not able to transfer and equalize spouses' happiness levels are more at risk of divorce. In many versions of the popular cooperative model of household bargaining, partners are represented as taking decisions sequentially, in order to maximize their joint output (or aggregate welfare) and then share it between them. This interpretation rests on the assumption that utility is transferable, i.e., that the initial distribution of well-being across spouses is easily modifiable, exactly as primary income can in principle be modified by income redistribution by the state. However, it may prove difficult to transfer utility between spouses, i.e. to modify the primary distribution of happiness that results from their actions. This could explain why assortative mating in terms of happiness is associated with a greater stability of marriage (because spouses do not need to redistribute utility). This also suggests that when spouses "agree" *ex ante* on a very unequal distribution of welfare, this puts the durability of their marriage at risk. From this point of view, public policy should avoid giving spouses incentives that lead to diverging levels of happiness. Individual income and employment have been shown to be among the main determinants of happiness; policies that affect the division of labor inside the household should keep this in mind.

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TABLE 1. DESCRIPTIVE STATISTICS OF COUPLES[*] (standard deviations in parentheses).

	BHPS (1996–2007)		GSOEP (1984–2007)		HILDA (2001–2007)	
Same partner in next period: →	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
Number of observations	28702	594	107627	2038	19598	546
Female Happiness (BHPS: 1–7; others: 1–10)	5.31 (1.22)	4.58 (1.4)	7.10 (1.78)	6.41 (1.99)	8.04 (1.49)	7.35 (1.88)
Male Happiness	5.27 (1.17)	4.70 (4.58)	7.07 (1.76)	6.48 (1.96)	7.94 (1.47)	7.43 (1.84)
Total happiness	10.58 (1.90)	9.28 (2.26)	14.17 (3.14)	12.60 (3.57)	16.22 (2.25)	14.98 (2.67)
Happiness gap (female – male)	0.05 (1.44)	–0.12 (1.67)	0.04 (1.65)	–0.31 (2.22)	0.13 (1.89)	–0.02 (2.20)
|Happiness gap|	1.04 (1.00)	1.28 (1.08)	1.08 (1.25)	1.55 (1.55)	1.10 (1.16)	1.52 (1.51)
Age female	43.36 (11.5)	34.46 (9.8)	46.9 (14.3)	43.0 (17.1)	43.9 (17.9)	34.8 (14.7)
Age male	45.76 (12.19)	36.79 (10.12)	48.5 (14.3)	42.5 (16.0)	43.6 (17.8)	37.2 (15.3)
Log household income	7.95 (0.64)	7.81 (0.63)	7.74 (0.49)	7.66 (0.49)	5.82 (0.63)	5.68 (0.67)
Log individual female income	6.57 (1.13)	6.68 (1.03)	2.50 (0.71)	2.58 (0.72)	4.84 (1.22)	4.67 (1.31)
Log individual male income	7.34 (1.02)	7.13 (1.08)	3.29 (0.55)	3.18 (0.56)	5.39 (1.23)	5.19 (1.24)
Number of children (< 16 years old)	0.80 (1.03)	1.13 (1.11)	0.83 (1.08)	0.59 (0.87)	1.83 (1.48)	1.47 (1.56)
Household size	3.21 (1.17)	3.42 (1.20)	3.13 (1.22)	2.90 (1.14)	2.92 (1.46)	2.87 (1.56)
Paid employment female (%)	0.62 (0.48)	0.63 (0.48)	0.55 (0.49)	0.56 (0.49)	0.58 (0.49)	0.59 (0.50)
Paid employment male (%)	0.66 (0.47)	0.64 (0.48)	0.73 (0.44)	0.74 (0.41)	0.71 (0.46)	0.76 (0.43)
Unemployed female (%)	0.02 (0.13)	0.05 (0.22)	0.05 (0.22)	0.07 (0.25)	0.03 (0.17)	0.07 (0.25)
Unemployed male (%)	0.03 (0.18)	0.10 (0.30)	0.05 (0.22)	0.08 (0.28)	0.04 (0.19)	0.05 (0.22)
Years of schooling female	10.18 (1.16)	10.21 (0.93)	11.3 (2.46)	11.3 (2.32)	12.44 (2.64)	12.21 (2.65)
Years schooling male	10.09 (1.16)	10.11 (0.99)	11.8 (2.68)	11.8 (2.43)	12.82 (2.57)	12.47 (2.27)
Duration of marriage (if 1st marriage)	21.5 (12.5)	13.2 (8.5)	25.0 (15.71)	17.9 (15.84)	22.6 (15.42)	14.5 (12.07)
Legally married (%)	0.84 (0.36)	0.53 (0.50)	0.91 (0.29)	0.65 (0.48)	0.84 (0.37)	0.56 (0.50)
Female less happy than male (%)	0.32 (0.47)	0.40 (0.49)	0.30 (0.46)	0.40 (0.46)	0.29 (0.46)	0.38 (0.49)
Female more happy than male (%)	0.36 (0.48)	0.36 (0.48)	0.32 (0.47)	0.29 (0.49)	0.37 (0.48)	0.35 (0.48)
Both equally happy (%)	0.32 (0.47)	0.24 (0.43)	0.39 (0.46)	0.31 (0.45)	0.34 (0.47)	0.27 (0.45)
Female's satisfaction with partner	6.24 (1.17)	4.58 (2.08)	8.01 (1.74)	6.83 (2.40)	8.31 (2.03)	6.09 (3.09)
Male's satisfaction with partner	6.35 (1.06)	5.23 (1.82)	8.13 (1.61)	6.99 (2.22)	8.50 (1.92)	6.34 (3.17)
|Gap in satisfaction with partner|	0.77 (1.07)	1.56 (1.51)	0.97 (1.21)	1.50 (1.62)	1.07 (1.41)	1.90 (1.99)
Total satisfaction with partner	43.36 (11.50)	34.46 (9.77)	16.18 (2.94)	13.99 (3.83)	17.16 (3.02)	13.61 (4.78)

[*]Each observation is a couple, defined as a woman with her characteristics and that of her partner.

TABLE 2. HAPPINESS GAPS INCREASE THE RISK OF DIVORCE.

Basic specification of equation (1). Estimating the probability of separation, controlling for total marital surplus, with definition (i) of the outside option U_{i0} as being the same for identical values of Xt:

$$\text{Separation}_{t+1} = f[\,(U_{At} + U_{Bt}), |U_{At} - U_{Bt}|\,, X_{At}, X_{Bt}, I_t] \qquad (1.i)$$

***Panel A. Estimates of the probability of breaking-up in* (*t* + 1)**

	BHPS	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
|Happiness difference| $_t$	**0.081 (1.55)**	**0.228 (7.98)**	**0.278 (3.77)**
Total happiness $_t$	–0.387 (13.21)	–0.215 (16.41)	–0.325 (8.00)
Age wife	–0.105 (15.70)	–0.019 (4.99)	–0.101 (12.22)
Age difference	0.039 (2.89)	–0.012 (1.23)	0.092 (3.76)
Education female	–0.068 (1.17)	0.065 (3.08)	–0.117 (2.54)
Education male	–0.086 (1.37)	–0.034 (1.71)	–0.029 (0.63)
Number of children	0.010 (0.18)	–0.358 (7.02)	0.113 (1.41)
Log total real household income $_t$	–0.158 (1.60)	–0.463 (4.74)	–0.576 (3.25)
Pseudo R^2/ *Log likelihood*	0.1092	0.0337	0.0872
Number observations	29296	98171	19389

Marginal effects (*100) are displayed, with *T* statistics in parentheses. Cluster (individual).

***Panel B. The asymmetric effect of happiness gaps. Probit estimates of the probability of breaking-up in* (*t* + 1)**

	BHPS	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
Female happiness < Male happiness	**0.407 (2.64)**	**0.497 (5.4)**	**0.550 (2.22)**
Female happiness > Male happiness	0.142 (0.97)	0.031 (0.3)	0.286 (1.23)
Pseudo R^2	0.1102	0.0374	0.0850
Number of observations	29296	98171	19389

Marginal effects (*100) are displayed, with *T* statistics in parentheses. Cluster (individual).
Other controls are as in Panel A.

TABLE 3. HAPPINESS GAPS INCREASE THE RISK OF DIVORCE.

Estimating the probability of a separation, controlling for total marital surplus, using definition (ii) of outside option U_{i0} :

- Probability of separation $_{t+1} = f[\ (U_{At} + U_{Bt}) - (U_{A0} + U_{B0}),\ |U_{At} - U_{Bt}|\ ,\ X_{At}, X_{Bt}, I_t]$ (1)
- (ii): U_{i0} is the self-declared happiness of singles of the same age and gender as individual *i* in the survey.

***Panel A. Probit estimates of a separation in* (*t* + 1)**

Definition of outside option U_{i0} : (ii) Mean LS of all singles in same age and gender	**BHPS**	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
Coefficient on |Happiness difference| $_t$	**0.799 (1.50)**	**0.227 (8.00)**	**0.345 (4.24)**
Pseudo R^2	0.1093	0.0380	0.0778
Number of observations	29296	98171	19389

The marginal effects of $|U_{At} - U_{Bt}|$ (*100) are displayed. Cluster (individual). The other controls are as in Table 2.

***Panel B. The asymmetric effect of the happiness gap. Probit estimates of a separation in* (*t* + 1)**

Definition of outside option U_{i0}: (ii) Mean LS of all singles in same age and gender	**BHPS**	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
Female happiness < Male happiness	**0.416 (2.64)**	**0.311 (2.94)**	**0.667 (2.40)**
Female happiness > Male happiness	0.144 (0.96)	0.006 (5.56)	0.003 (1.23)
Pseudo R^2	0.1103	0.0364	0.0748
Number of observations	29296	98171	19389

The marginal effects (*100) are displayed, with *T* statistics in parentheses. Cluster (individual). The other controls are as in Table 2.

TABLE 4. HAPPINESS GAPS INCREASE THE RISK OF DIVORCE EVEN WHEN MARITAL SURPLUS IS POSITIVE

Estimating the probability of separation, controlling for total marital surplus and restricting the sample to positive total surplus.

$$\text{Separation}_{t+1} = f[(U_{At} + U_{Bt}) - (U_{A0} + U_{B0}), |U_{At} - U_{Bt}|, X_{At}, X_{Bt}, I_t] \quad (1)$$

$$\text{with} \quad (U_{At} + U_{Bt}) > (U_{A0} + U_{B0}) \quad \text{(condition 1)}$$

***Panel A. Probit estimates of a separation in* (*t* + 1)**

Coefficient on |Happiness difference| $_t$	**BHPS**	**GSOEP**	**HILDA**
Definition of U_{i0} ↓	Coefficient (*T* statistics)		
(ii) Mean LS of all singles in same age and gender	**0.157 (2.59)**	**0.155 (3.61)**	**0.383 (3.31)**
Pseudo R^2	0.093	0.0214	0.0555
Number of observations	21712	56018	12713
(iii) Mean LS 3 years after breakup	**0.258 (3.49)**	**0.192 (6.00)**	**0.325 (3.58)**
Pseudo R^2	0.099	0.0443	0.0704
Number of observations	16661	64367	15673

The marginal effects of $|U_{At} - U_{Bt}|$ (*100) are displayed. Cluster (individual). The other controls are as in Table 2.

***Panel B. The asymmetric effect of the happiness gap. Probit estimates of a separation in* (*t* + 1)**

	BHPS	**GSOEP**	**HILDA**
Definition of U_{i0} ↓	Coefficient (*T* statistics)		
(ii) LS of all singles in same age and gender			
Female happiness < Male happiness	**0.413 (2.83)**	**0.177 (2.07)**	**0.702 (2.39)**
Female happiness > Male happiness	0.132 (0.98)	0.0473 (0.58)	–0.002 (–0.01)
Pseudo R^2	0.0938	0.0582	0.0536
Number of observations	21712	56018	12713
(iii) LS three years after breakup			
Female happiness < Male happiness	**0.511 (2.79)**	**0.345 (3.89)**	**0.577 (2.35)**
Female happiness > Male happiness	0.329 (2.05)	0.076 (0.90)	0.154 (0.67)
Pseudo R^2	0.0983	0.0414	0.0678
Number of observations	16661	64367	15673

The marginal effects (*100) are displayed. Cluster (individual). The other controls are as in Table 2.

TABLE 5. HAPPINESS GAPS INCREASE THE RISK OF SEPARATION EVEN WHEN INDIVIDUAL MARITAL SURPLUS IS POSITIVE.

Estimating the probability of separation, controlling for total marital surplus and restricting the sample to positive marital surplus for each spouse.

$$\text{Separation}_{t+1} = f[\,(U_{At} + U_{Bt}) - (U_{A0} + U_{B0}),\ |U_{At} - U_{Bt}|\ ,\ X_{At}, X_{Bt}, I_t] \qquad (1)$$

with $U_{At} > U_{A0}$ and $U_{Bt} > U_{B0}$. (condition 2)

***Panel A. Probit estimates of a separation in* (*t* + 1)**

Coefficient on |Happiness difference| $_t$			
Definition of U_{i0} ↓	**BHPS**	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
(ii) Mean LS of all singles in same age and gender	**0.239 (2.49)**	**0.135 (3.07)**	**0.398 (2.11)**
Pseudo R^2	0.0715	0.0237	0.0388
Number of observations	17887	39509	8485
(iii) Mean LS 3 years after divorce	**0.170 (1.43)**	**0.120 (2.43)**	**0.141 (1.79)**
Pseudo R^2	0.1461	0.0446	0.1357
Number of observations	8244	58319	10939

The marginal effects of $|U_{At} - U_{Bt}|$ (*100) are displayed. Cluster (individual). The other controls are as in Table 2.

***Panel B. The asymmetric effect of the happiness gap. Probit estimates of a separation in* (*t* + 1)**

Definition of U_{i0} ↓	**BHPS**	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
(ii) Mean LS of all singles in same age and gender			
Female happiness < Male happiness	**0.278 (1.79)**	**0.209 (1.76)**	**0.729 (1.93)**
Female happiness > Male happiness	0.133 (0.96)	0.052 (0.40)	0.241 (0.74)
Pseudo R^2	0.0700	0.0231	0.0382
Number of observations	17887	39509	8485
(iii) LS three years after breakup			
Female happiness < Male happiness	**0.252 (1.49)**	**0.185 (2.13)**	**0.291 (1.73)**
Female happiness > Male happiness	0.146 (1.06)	0.047 (0.59)	0.052 (0.36)
Pseudo R^2	0.1464	0.0446	0.1062
Number of observations	8244	58319	10939

The marginal effects are displayed. Cluster (individual). The other controls are as in Table 2.

TABLE 6. DYNAMICS: A WIDENING OF THE HAPPINESS GAP INCREASES THE RISK OF DIVORCE.

Estimates of equation (2):
Probability of divorce $t+1 = f[\, U_{At} + U_{Bt}, (|U_{At} - U_{Bt}| - |U_{At-3} - U_{Bt-3}|)\,, X_{At}\,, X_{Bt}, I_t]$ (2)

Conditional on $U_{At} \geq U_{At} - 3$ and $U_{Bt} \geq U_{Bt-3}$ (condition 3)

***Probit estimates of a separation in* (*t* + 1)**

Coefficient on ↓	**BHPS**	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
$\lvert U_{At} - U_{Bt}\rvert - \lvert U_{At-3} - U_{Bt-3}\rvert$	**0.031 (0.27)**	**0.172 (2.87)**	**1.329 (2.69)**
Pseudo R2	0.0804	0.0156	0.1391
Number of observations	6801	30572	755

The marginal effects of $(|U_{At} - U_{Bt}| - |U_{At-3} - U_{Bt-3}|)$ *100 are displayed. Cluster (individual).
The other controls are as in Table 2.

TABLE 7. TAKING FORMER EXPECTATIONS AS THE VALUE OF THE OUTSIDE OPTION.

Probit estimates of the risk of separation in t* + 1. *Basic specification* (1.*i*), *GSOEP survey

Coefficient on |Happiness difference| $_t$	**GSOEP**		
Definition of outside option U_{i0} **↓**	**Equation (1)**	**Condition 1**	**Condition 2**
	Coefficients (*T* statistics)		
Expected happiness next year as of *t* – 1	0.279 (4.06)	0.221 (2.29)	0.271 (2.06)
Expected happiness in 5 years as of *t* – 5	0.312 (6.57)	0.191 (2.70)	0.173 (1.50)

The marginal effects (*100) are displayed, with *T* statistics in parentheses. Cluster (individual). Each cell corresponds to a separate regression. The other controls are as in Table 2.

Expected happiness next year is only available in years 1984–1987. Expected happiness in 5 years' time is available in 1990–2004.

TABLE 8. ROBUSTNESS: SATISFACTION WITH PARTNER INSTEAD OF SATISFACTION WITH LIFE

***Probit estimates of the risk of separation in t* + 1. *Basic specification* (1.*i*)**

	BHPS	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
Female satisfaction with partner < Male satisfaction with partner	**0.303 (2.58)**	**0.700 (1.74)**	**1.322 (5.49)**
Female satisfaction > Male satisfaction with partner	–0.138 (1.1 6)	0.536 (1.41)	0.839 (3.29)
Pseudo R^2	0.2060	0.0413	0.0898
Number of observations	27973	6039	18021

The marginal effects are displayed (*100). Cluster (individual). The other controls are as in Table 2.

TABLE 9. RULING OUT REVERSE CAUSALITY.

Probit estimates of a separation in (t + 1). Estimates of equation (1) with specification (i), as in Table 1.

Coefficient on ↓	**BHPS**	**GSOEP**	**HILDA**
	Coefficient (T statistics)		
Coef. on 3 years lagged |Happiness difference| $_{t-3}$	**0.115 (1.68)**	**0.096 (2.72)**	**0.285 (2.98)**
Pseudo R^2 Number of observations	0.0888 13133	0.0298 67945	0.0655 7713
Coef. on |Happiness difference| in the first year of marriage on probability of ever divorcing	**3.959 (2.06)**	**2.846 (2.15)**	**2.307 (2.36)**
Pseudo R^2 Number of observations	0.0352 653	0.0553 899	0.0504 731
Coef. on |Happiness difference| $_t$ for those who do not form a new union in t + 1	**0.070 (1.42)**	**0.195 (8.75)**	**0.267 (3.64)**
Pseudo R^2 Number of observations	0.1081 29240	0.0565 99735	0.0819 20491
Coef. on |Happiness difference| $_t$ for those who do form a new union in t + 1	**0.010 (0.71)**	**0.009 (2.02)**	**0.019 (3.67)**
Pseudo R^2 Number of observations	0.0804 28758	0.0687 97685	0.1153 19375

The marginal effects are displayed (*100). Cluster (individual). The other controls are as in Table 2.

TABLE 10. ROBUSTNESS: ADDITIONAL CONTROLS AND ALTERNATIVE SPECIFICATIONS — COEFFICIENT ON THE HAPPINESS GAP.

Probit estimates of a separation in (t + 1). Estimates of equation (1) with specification (i), as in Table 2

Coef on |Happiness Gap|	**BHPS**	**GSOEP**	**HILDA**
Controlling for:	Coefficient (T statistics)		
Happiness gap in 1st year of marriage*	0.098 (1.26)	0.217 (2.21)	0.535 (2.49)
Shocks			
Serious injury to wife	NA	NA	0.288 (3.95)
Serious injury to husband	NA	NA	0.179 (2.35)
Wife victim of psychical violence	NA	NA	0.249 (3.52)
Husband victim of psychical violence	NA	NA	0.190 (2.56)
Wife victim of property crime	NA	NA	0.287 (3.98)
Husband victim of property crime	NA	NA	0.197 (2.58)
Wife detained in jail	NA	NA	0.285 (3.94)
Husband detained in jail	NA	NA	0.1919 (2.52)
Wife fired	NA	NA	0.288 (3.97)
Husband fired	NA	NA	0.187 (2.48)
Wife's firm closure	NA	0.236 (8.26)	NA
Husband's firm closure	NA	0.1942 (8.51)	NA
Wife's disability		0.236 (8.23)	0.295 (4.00)
Husband's disability		0.195 (8.54)	0.199 (2.59)
Other specifications			
Year fixed effects	0.0778 (1.52)	0.243 (8.49)	0.294 (4.27)
Happier/unhappier partner instead if |happiness gap|$_t$	0.0349 (0.43)	0.441 (7.78)	0.325 (2.15)

*This result is different from that in Table 4: this table displays the coefficient on the \|happiness gap\|$_t$
The marginal effects are displayed (*100). Cluster (individual). The other controls are as in Table 2.

TABLE 11. ROBUSTNESS: PROBIT ESTIMATES OF A SEPARATION IN (t + 1) — COEFFICIENTS ON ADDITIONAL CONTROLS

Probit estimates of a separation in (t + 1). Estimates of equation (1) with specification (i), as in Table 2

Coefficient on each additional control (introduced separately)	**BHPS**	**GSOEP**	**HILDA**
	Coefficient (*T* statistics)		
Female income Male income (instead of household income)	0.138 (2.15) –0.138 (–3.19)	0.169 (2.08) –0.396 (3.87)	0.147 (0.54) –0.298 (1.42)
Total happiness squared 1st line: linear term; 2nd line: quadratic term	–0.417 (2.56) 0.002 (0.18)	–0.247 (4.26) 0.002 (0.50)	–0.181 (1.93) 0.003 (0.97)
Female unemployed	0.935 (2.36)	2.629 (15.52)	0.601 (1.08)
Male unemployed	0.759 (2.51)	0.442 (2.51)	2.224 (3.51)
Owner of one's house	–0.861 (5.20)	–0.804 (9.24)	–1.480 (5.53)
Same nationality	–1.028 (3.24)	–0.823 (4.17)	–0.318 (1.31)
Same religion	–0.291 (1.35)	3.407 (29.16)	–1.587 (7.49)
Both immigrants	–0.136 (0.23)	–1.245 (8.19)	–0.035 (0.21)
Parents of wife divorced	NA	NA	1.194 (3.70)
Parents of husband divorced	NA	NA	0.419 (0.26)
Female's satisfaction with partner	–0.611 (–20.42)	–0.320 (4.30)	–0.135 (5.94)
Male's satisfaction with partner	–0.572(–15.38)	–0.191(2.93)	–0.0428 (1.92)
Dealing with household finance			NA
Each spouse manages her money separately	NA	omitted	NA
Female manages money, partner receives portion	NA	–0.185 (0.42)	
Male manages money, partner receives portion	NA	–1.211 (2.75)	
All money shared	NA	–1.782 (4.70)	
Part of money shared, part kept separate	NA	–0.424 (0.98)	
Importance of family to female	–0.347 (–3.00)	–1.133 (4.88)	–0.137 (1.73)
Importance of family to male	–0.270 (–1.94)	–.943 (5.56)	–0.040 (0.67)
Female fired	NA		–0.129 (0.46)
Male fired	NA		0.663 (2.53)
Female's firm closure	NA	–0.290 (0.66)	NA
Male's firm closure	NA	–0.353 (0.90)	NA
Female's disability	NA	–0.261 (1.85)	–0.123 (1.02)
Male's disability	NA	0.180 (1.48)	0.342 (2.58)

The marginal effects are displayed. Cluster (individual). The other controls are as in Table 2.

FIGURE 1. UTILITY FRONTIERS.

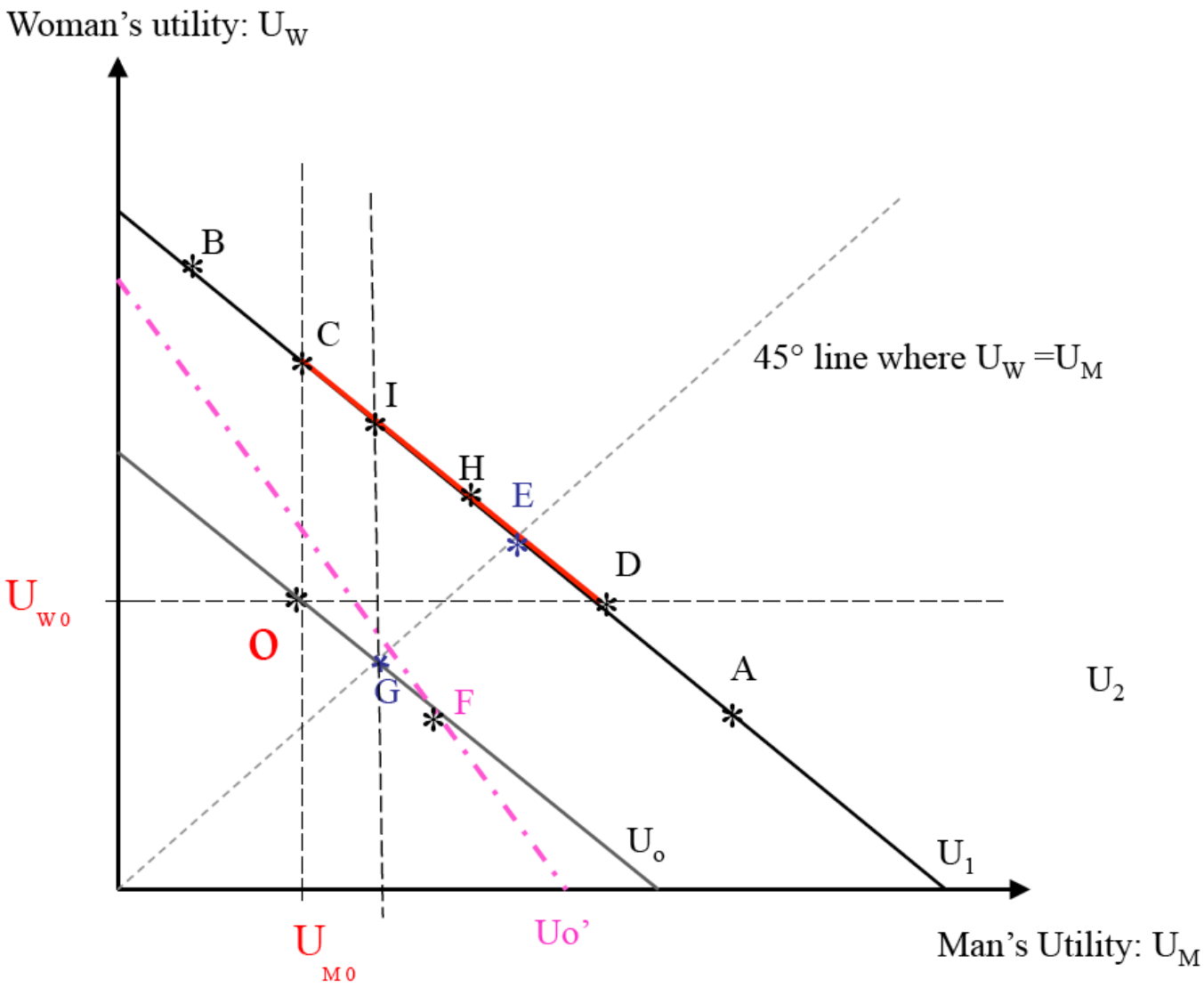


FIGURE 2. THE DISTRIBUTION OF HAPPINESS GAPS.

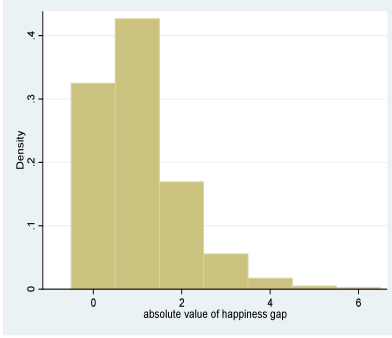
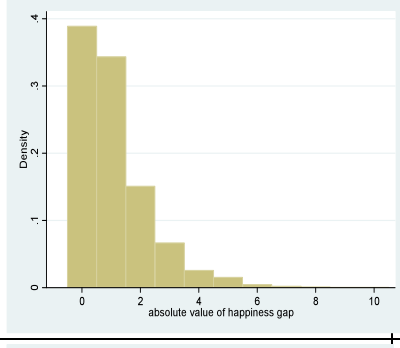
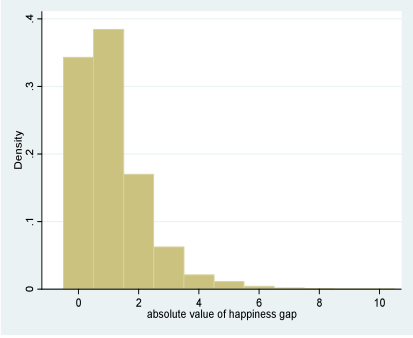
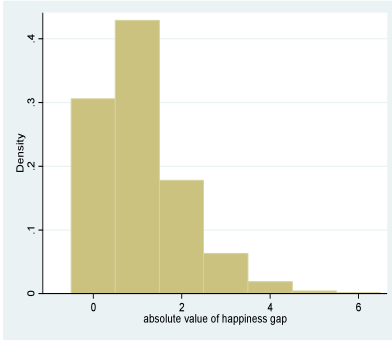
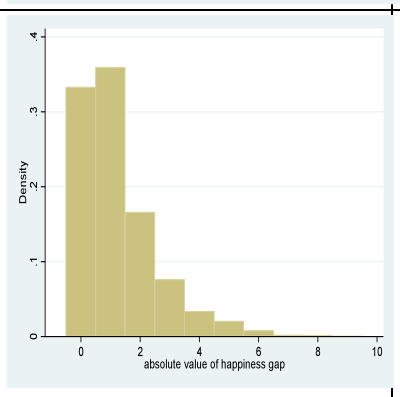
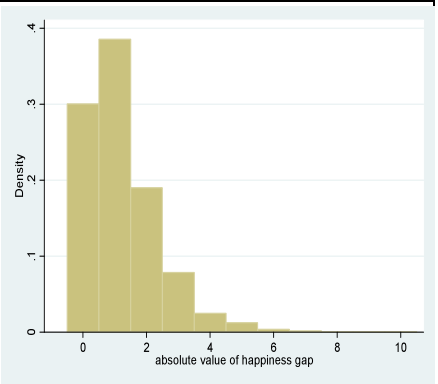
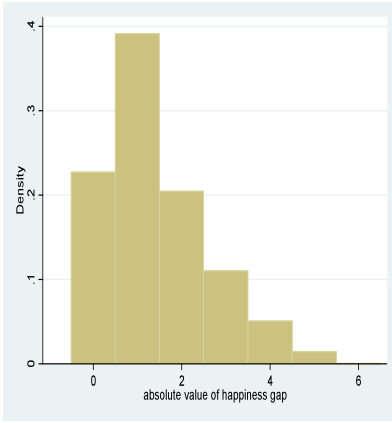
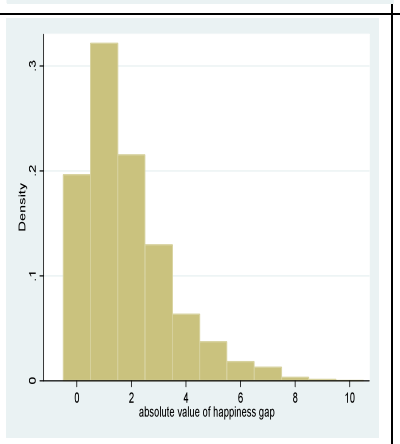
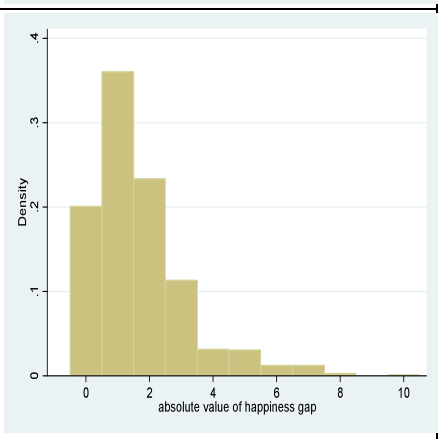
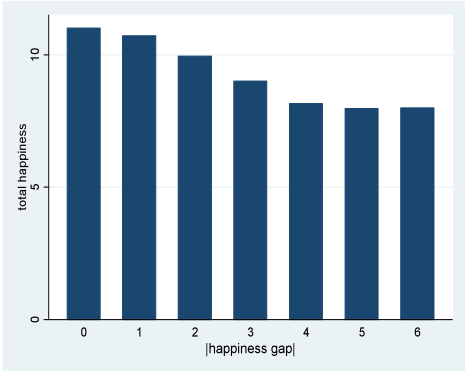
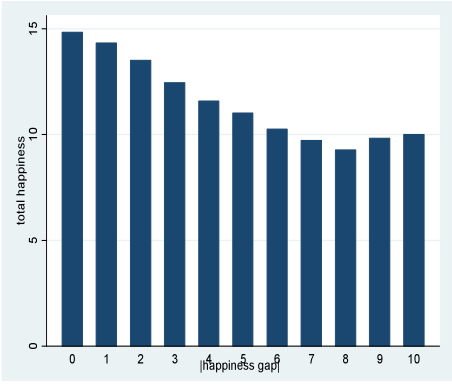
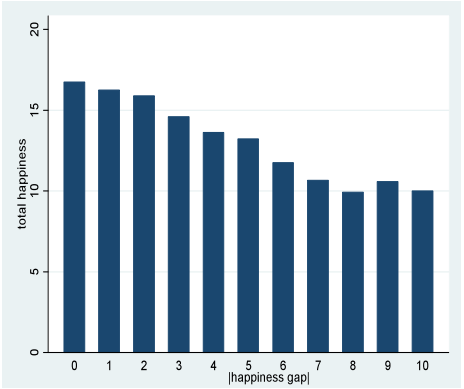
	BHPS	GSOEP	HILDA
Married couples			
De facto couples			
Randomly matched singles aged 18–55 (2007 cross-section)			

FIGURE 3. TOTAL LIFE SATISFACTION AND THE ABSOLUTE VALUE OF THE HAPPINESS GAP.

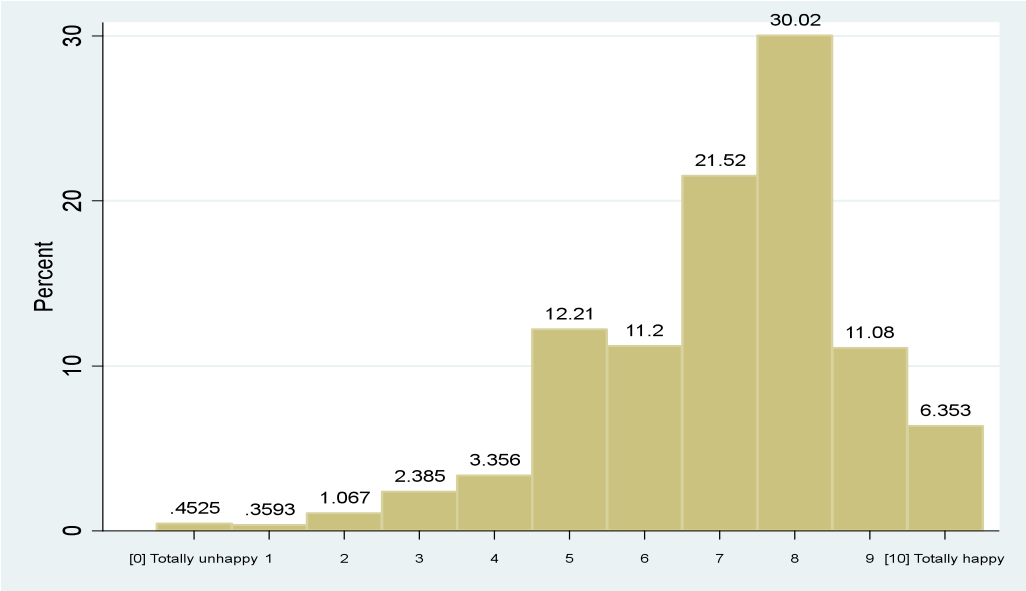
BHPS	GSOEP	HILDA
		

APPENDIX

FIGURE A1. THE DISTRIBUTION OF SELF–DECLARED HAPPINESS.

BHPS. How dissatisfied or satisfied are you with life as a whole? (scale: 1–7)

GSOEP. How satisfied are you with life as a whole? (scale: 0–10)



HILDA. How satisfied are you with life as a whole? (scale: 0–10)